

5.4 Extracting Installer Source Code and Other Tools

This section will extract installer used in the development process of learning all the source code, and other small tools, including:

- Linux kernel source code
- Embedded GUI Qtopia-2.2.0 source code (x86 and ARM platform is divided into two versions)
- Embedded GUI QtE-4.6.3 source code (ARM version)
- Busybox-1.13 source code
- Linux source code, programming examples (both friendly and self-development and the opening of the ARM)
- To start the Linux bootloader of vboot
- Other open source bootloader (for Linux)
- Other open source software source code, such as the boa (web server), madplay (a command-line mp3 player)
- Object file system directory
- Object file system image creation tools mkyaffsimage
- Graphical interface of Linux logo creation tools LogoMaker

Note: All source code and tools are installed by extract method, all source code use the unified compiler arm-linux-gcc-4.3.2 compilation (see previous section)

Here are the details of extract the installation process, and a brief introduction.

5.4.1 Installing the source code extract

First create a working directory “/opt/FriendlyARM/mini2440” at the command line “mkdir -p /opt/FriendlyARM/mini2440”, figure, all source code later step will extract installer to this directory:



```

root@tom:/opt/FriendlyARM/mini2440
File Edit View Terminal Tabs Help
[root@tom /]# mkdir -p /opt/FriendlyARM/mini2440
[root@tom /]# cd /opt/FriendlyARM/mini2440/
[root@tom mini2440]# pwd
/opt/FriendlyARM/mini2440
[root@tom mini2440]#

```

(1) Linux source code package ready

Fedora 9 system in the “/tmp” directory, create a temporary directory “/tmp/linux”

```
#mkdir /tmp/linux
```

Description: This is to following steps, in fact you can use a different directory, you can extract directly from the CD-ROM installation.

(2) Extract the installation of the Linux kernel source code

In the working directory “/opt/FriendlyARM/mini2440” execute:

```
#cd /opt/FriendlyARM/mini2440
#tar xvzf /tmp/linux/linux-2.6.32.2-mini2440-20100106.tar.gz
```

Will create a generation linux-2.6.32.2 directory, which contains a complete Linux 2.6.32.2 kernel source code

Description: 20100106 distribution date our logo, to the actual date of the CD suffix prevail.

- (3) Extract the embedded graphics systems installed Qtopia source code

In the working directory "/opt/FriendlyARM/mini2440" execute:

```
#cd /opt/FriendlyARM/mini2440
#tar xvzf /tmp/linux/x86-qtopia.tgz
#tar xvzf /tmp/linux/arm-qtopia.tgz
```

Create x86-qtopia and arm-qtopia two directories, and include all of the corresponding source code.

Description: 20100108 distribution date our logo, to the actual date of the CD suffix prevail. And previous Qtopia source code package is different from the source code package is now no longer distinguish mouse (mouse support) and tp (touch screen support), this system can support both co-exist, so there is only one source code package, which also contains an embedded browser konquer source code.

Addition, in order to develop are user-friendly and learning to use this source code package compared to Qt's original version has been patched, and made many improvements, which source code are widely, depending on your interested.

- (4) Extract the embedded graphics system installed Qt-4.6.1 source code

In the working directory /opt/FriendlyARM/mini2440 execute:

```
#cd /opt/FriendlyARM/mini2440
#tar xvzf /tmp/linux/arm-qte-4.6.3-20100802.tar.gz
```

Create arm-qte-4.6.3 directory, and contains all the corresponding source code.

Description: arm-qt archive dates behind suffix may be, it is our issue or update date, please suffix the actual date of the CD prevail.

- (5) Extract the source code install Busybox

Busybox is a lightest Linux command line tools for set, this uses busybox-1.13.3 version.

Users can download the latest version from their official website (<http://www.busybox.net>).

In the working directory /opt/FriendlyARM/mini2440 execute:

```
# cd /opt/FriendlyARM/mini2440
# tar xvzf /tmp/linux/busybox-1.13.3-mini2440.tgz
```

Busybox-1.13.3 directory will be created, containing the appropriate version of the full source code.

Note: To use user-friendly compilation, we made a default configuration file fa.config.

(6) Extract the installation of Linux sample program

In the working directory "/opt/FriendlyARM/mini2440" execute:

```
#cd /opt/FriendlyARM/mini2440
#tar xvzf /tmp/linux/examples-20100108.tgz
```

Will create examples directory, and include Linux programming code examples.

CD - ROM Description: 20100108 release date our logo, to the actual date of the CD-ROM subject suffix. Code directory are friendly self-development of ARM, and provide all the source code, which are based on the command line applet.

(7) Extract the source code installed vboot

So achieve to automatic adaptation support 64M/128M mini2440/micro2440, specifically for the Linux system we designed a simple bootloader: vboot, rather than using the previous vivi.

In the working directory /opt/FriendlyARM/mini2440 execute:

```
#cd /opt/FriendlyARM/mini2440
#tar xvzf /tmp/linux/vboot-src-20100106.tar.gz
```

This will create vboot directory, which contains the bootloader source code and Makefile. Description: 20100106 release date our logo, to the actual date of the CD-ROM subject suffix

(8) Extract the installation of with other open source bootloader and source code

In addition vboot, the development board also provides other three open-source bootloader (see section 8 of this manual), vivi and u-boot which designed to compile the Linux platform.

In the working directory /opt/FriendlyARM/mini2440 execute:

```
#cd /opt/FriendlyARM/mini2440
#tar xvzf /tmp/linux/bootloader.tgz
```

Bootloader will create the directory, which contains two kinds of vivi and u-boot bootloader source code.

Note: vivi here applies only to 64M NAND Flash of mini2440/micro2440 board, u-boot is provided by the users, we have not used, for its functionality and performance are not understood.

5.4.2 Extract objectives file system to create

In the working directory /opt/FriendlyARM/mini2440 execute:

```
#cd /opt/FriendlyARM/mini2440  
#tar xvzf /tmp/linux/rootfs_qtopia_qt4-20100816.tar.gz
```

Will create rootfs Qtopia Qt4 directory, the directory and the target board using the contents of the file system is exactly the same.

Note: 20100816 releases date is our logo, to the actual date of the CD number suffixes prevail.

Before objective file system have 4: root_default, root_nfs, root_qtopia_tp, and root_qtopia_mouse, they are starting to realize the different ways and created functional peripherals, and now we put it into a uniform, which includes a complete test Qtopia system, the latest Busybox have commonly used command-line tools and before, it has the following features:

- Automatic Identification NFS or local start
- Supports USB mouse and touch-screen co-existence
- Automatically identifies the connected display module is connected the output of a touch screen, to determine first whether to use start to correct.
- Automatic Identification normal or high-speed SD card (maximum support 32G) and USB flash drives
- Includes dual-graphics systems Qtopia-2.2.0 and QtE-4.6.1

5.4.3 Necessary to extract the installation utility

(1) The target file system image creation tools mkyaffs2image

Take the step to write in rootfs_qtopia_qt4 target directory to use, you need to use the appropriate mkyaffs2image toolkit is a command line program that is use to host file system directory on the objectives, make into an image file to be programmed into the development board.

For 64M or 128M/256M/512M/1G of mini2440/micro2440 respectively, two sets of production tools: mkyaffs2image and mkyaffs2image-128M. Which mkyaffs2image 64M version is to produce for the file system image tools, it follows the previous name; mkyaffs2image-128M is the production version of the file system for 128M/256M/512M/1G image tools, in order to facilitate the distinction, we it is named this.

In the working directory /opt/FriendlyARM/mini2440 execute:

```
# cd /opt/FriendlyARM/mini2440
# Tar xvzf /tmp/linux/mkyaffs2image.tgz -C /
```

Note: C is capitalized; C with a trailing space, C is to change the installation directory

Description: The previous core system support is yaffs file system and now using yaffs2 file system, requiring different production tools and we are here to call it mkyaffs2image, in accordance with the above command after extracting it will be installed to “/usr/sbin” directory, and create two files: mkyaffs2image and mkyaffs2image-128M.

(2) Extract the installation LogoMaker

In the working directory /opt/FriendlyARM/mini2440 execute:

```
#cd /opt/FriendlyARM/mini2440
#tar xvzf /tmp/linux/logomaker.tgz -C /
```

Note: C is capitalized; C with a trailing space, C is to change the installation directory

Note: LogoMaker is a FriendlyARM Linux logo developed a simple authoring tool, Internet has a lot of information on how to use command line tools to bmp, jpg and png format images converted to Linux logo file, in this we designed a graphical of the version, which is based Fedora9 development.

Execute the above command, LogoMaker will be installed to “/usr/sbin” directory, it has only one file, after installation at the command line enter the following interface can LogoMaker, in a later chapter will introduce how to use it:

